REMARKS

This responds to the Office Action mailed on July 22, 2009.

No claims have been amended, claim 11 and 42 are canceled, and no claims are added; as a result, claims 1-8, 10, 12-14, 16-31, 35, 39-41, 43-59, 61, 62, 67, 68, 70, 121,122, 132, 133, 139, 141, 143-145, 147-151, 154-166, 168, 184, 186, 187 and 191 are now pending in this application.

Examiner Interview

Applicant would like to thank Examiner Nerangis for the telephonic interview conducted with Applicant's representative, Ben Armitage, on October 21, 2009. The obviousness rejection was discussed and possible amendments. Applicant requests that Examiner Nerangis contact Ben Armitage again before issuing any further office actions.

Claim Objections

Claims 10 and 11 were objected to. Claim 10 has been amended. Claim 11 has been canceled.

Applicant was advised that should claim 42 be found allowable, claim 70 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. Claim 42 has been canceled.

Double Patenting Rejection

Claims 1-7, 15, 17, 35, 42-45, 70, and 151 were provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 39-41 of now issued U.S. Patent 7,601,425.

Applicant notes the provisional nature of this rejection, and will consider filing a Terminal Disclaimer in compliance with 37 CFR 1.321(b)(iv) upon allowance of the present claims herein to obviate these rejections.

§ *103 Rejection of the Claims*

Claims 1-8, 10-14, 16-21, 30, 31, 56-59, 61, 62, 67, 68, 139, 141, 143-145, 149, 150, 164-166, 168, and 184 were rejected under 35 U.S.C. 103(a) as being unpatentable over Jung et al (WO 02/31064).

Jung Does Not Disclose All Elements Of Claim 1

Independent claim 1 recites, among other things, "one or more organic binders; and solid components comprising; a praseodymium oxide selected from the group consisting of oxides, mixed oxides, solid solution oxides, hydrated oxides, hydroxides, and combinations thereof; one or more substantially insoluble extenders selected from the group consisting of a neutral to slightly acidic generating extender, an acidic generating extender, and combinations thereof; wherein the solid components comprise about 1 wt% to about 90 wt% of the praseodymium oxide; wherein the non-chromate containing composition is capable of curing naturally and, upon curing, is capable of generating a pH between about 2 and about 8 at an interface between the composition and a substrate". The Jung reference does not disclose all elements of claim 1.

The Jung reference describes a method of pre-treating or coating a metallic surface with a multi-layer assembly of coatings. The Jung reference does not describe "a praseodymium oxide selected from the group consisting of oxides, mixed oxides, solid solution oxides, hydrated oxides, hydroxides, and combinations thereof" or "wherein the solid components comprise about 1 wt% to about 90 wt% of the praseodymium oxide". The Examiner states that Jung teaches the addition of rare earth oxide and the praseodymium is a type of rare earth oxide (see Action at page 4). But in fact, the Jung reference states specifically, that the "layers may comprise at least one rare earth element compound in particular at least one compound selected from the group consisting of chloride, nitrate, sulfate, sulfamate, and complexes, for example, with a halogen or with an aminocarboxylic acid, in particular complexes with EDTA, NTA or HEDTA, in which context scandium, yttrium, and lanthanum are also regarded as being rare earth elements" (see Jung at paragraph [0135]). Not only does Jung not describe the use of praseodymium oxide, but Jung does not describe "one or more substantially insoluble extenders selected from the group consisting of a neutral to slightly acidic generating extender, an acidic generating extender, and combinations thereof; wherein the solid components comprise about 1 wt% to about 90 wt% of the praseodymium oxide."

Invention Not Obvious When Suggestion to Combine Comes from Invention

The Federal Circuit has held that an invention is not obvious when the suggestion to combine references comes from an applicant's patent application. *See ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984).

The Jung reference describes an encyclopedia of possible components to add to a paint composition. Applicant's claimed composition utilizes a synergy between disclosed components that produces unexpected corrosion inhibiting results. The use of substantially insoluble extenders adds a controlled volume to the composition and maintains the inertness of the extenders. If using soluble components, it is unpredictable at best as to how those components change their corrosion-inhibiting properties once in solution. When the cured composition is exposed to an aqueous environment, the neutral to slightly acidic or acidic extender generates a controllable "pH between about 2 and about 8 at an interface between the composition and a substrate" that triggers and enhances the release and transport of cations from the praseodymium oxide (or rare earth component, generally). The generally inert rare earth compound may slowly dissolve due to the pH at the interface and allow for a controlled release of cations that protect a metal substrate. Therefore, unlike Jung or other prior art that uses the initial substrate corrosion pH to stimulate the inhibitor, by which time the corrosion currents could become too high and excessive for the inhibitor to release enough in time, the claimed invention utilizes the extender to be able to release an effective amount of inhibitor at all times in a corrosive or moist environment. In this way, when the substrate does undergo corrosion, there is already a supply of inhibitor to slow the corrosion process down. The extra increase in pH due to the initial corrosion then releases just the molar equivalent of inhibitor necessary to the "neutralize" the remaining potential. Without the constant presence of a small amount of inhibitor being released by the extender or rare earth oxide, the corrosion may become too great too quickly for just rare earth oxides to handle.

Such synergy and unexpected results are not taught, disclosed or predicted from the Jung reference. The Jung reference describes a multi-step process (see paragraph 0118) requiring the use of micro and nano-size particles. Although the reference lists long, expansive lists of components, the Examples indicate that the system requires the use of amines to neutralize acidic polymers to produce corrosion resistance, especially when cured closer to 180°C (see Examples

2-13, 15-20 and 30 for instance). The Examiner is utilizing impermissible hindsight to attempt to recreate Applicant's claim 1 from the Jung reference.

a. The Invention As a Whole.

Because the Examiner only cited a single reference for an obviousness rejection, it is admitted that not all elements of the claimed invention exist in the prior art. In addition to Applicant's argument that further elements are not present in Jung, the Examiner is not considering the invention as a whole. In determining obviousness, "the inquiry is not whether each element existed in the prior art, but whether the prior art made obvious the invention as a whole for which patentability is claimed." *Hartness International, Inc. v. Simplimatic Engineering Co.*, 819 F.2d 1100, 2 USPQ2d 1826 (Fed.Cir. 1987). The Examiner is picking and choosing portions of different embodiments of Jung to cite against the claimed invention and not considering the claimed invention as a whole. The combination of components and in some cases, amounts of components, creates a synergy of corrosion resistance performance as described in Applicant's invention and not in the prior art. Applicant respectfully requests that the presently claimed invention be considered as a whole.

The Examiner claims that Jung includes all aspects of the invention and it is only a matter of one skilled in the art figuring out the parameters in which to use each component. Despite Jung missing elements of the claimed invention, as discussed above, some elements present in Jung have explicit restrictions on the use of such component. Such restrictions, if followed by one skilled in the art, would make the claimed invention inoperable or performance properties unattainable.

b. The Invention is not "Obvious To Try". As stated in *KSR International Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1742, choosing from a finite number of identified predictable solutions, with a reasonable expectation of success, or an "obvious to try" rationale may support a prima facie case of obviousness. However, in this case, the selection of Applicants' claimed composition is not "obvious to try."

The size of each Genus described in Jung is extremely large. For example, paragraphs [0041] and [0138]-[203] describe a vast number of silane compositions and derivatives. And such expansive, non-purposeful, disclosure is found for dozens of possible ingredients in the Jung reference.

The selection of Applicants claimed composition of one or more organic binders, and solid components comprising a praseodymium oxide selected from the group consisting of oxides, mixed oxides, solid solution oxides, hydrated oxides, hydroxides, and combinations thereof, and one or more substantially insoluble extenders would not be "obvious to try" based on this disclosure. Contrary to the situation in *KSR*, there is not a finite, small number of options that would convince an ordinarily skilled artisan of obviousness, but a great number of compounds to select from.

c. Predictability of the Technology. Based on Jung, it is not obvious to try Applicant's claimed composition. The compositions disclosed in Jung are exhaustive and do not point to Applicant's claimed composition, and the laundry lists of compounds contained in the disclosure teach thousands of combinations. The combination of these many elements is unpredictable, and one of skill in the art would not be able to follow any routine prior art method with a reasonable expectation of success.

d. Totality of Teachings. Jung describes many attempts to find a suitable coating and a myriad of ingredients. There is no finite number of combinations, rendering the invention obvious to try. Further, Jung teaches other chemical species not required for the performance of Applicant's coating. Applicant claims a combination that is not taught or suggested by the prior art. Accordingly, the claimed invention is non-obvious.

The Reference Teaches Away from the Claimed Invention

One skilled in the art would be lead astray from forming Applicant's claimed invention if relying on the Jung reference. The Jung reference includes the use of chromium. Although the reference states that it may be desirable to avoid chromium, "nevertheless, the addition of chromium has a particular corrosion protection effect, given that a self-healing effect may come about at a site which has been damaged" (see paragraph [0008]). The composition of Jung also includes "where appropriate at least one chromium(VI) compound" (see Jung at paragraph [0021], Tables A-J and Table 3). Jung makes multiple statements regarding the unintentional presence of chromium, such as, "preferably, no chromium is added deliberately to the solution or dispersion" (see paragraph [0032]). Not utilizing chromate is merely an option, as stated in paragraph [0072] of Jung. Or, as Jung explicitly states, "the method of the invention can,

however, also be employed *advantageously* in the presence of at least one chromium compound" (see paragraph [0070], emphasis added). One skilled the art would not look to Jung for developing a chromate-free corrosion inhibiting composition.

The Jung reference describes a multi-layer, multi-step process (see paragraph 0118) requiring the use of micro and nano-size particles. Fine inorganic particles are preferable to produce many thin layers (see paragraphs [0011] and [0018]). The process also requires multiple steps, including at least an application of anticorrosion layer and then an application of a paint-like layer (see paragraph [0018]). Particle size is most preferable "from 10 to 25 nm" (see paragraph [0043]). Paragraph [0081] states, "it was surprising that simply the addition of finely divided particles resulted in a significant improvement in corrosion resistance."

Although the reference lists long, expansive lists of components, the Examples indicate that the system requires the use of amines to neutralize acidic polymers to produce corrosion resistance, especially when cured closer to 180°C (see Examples 2-13, 15-20 and 30 for instance). Paragraph [0046] describes how the "acid groups of the synthetic resin and/or of the polymer may have been neutralized with ammonia, with amines".

The only compositions of Jung to even include a rare earth compound for testing are shown in Table 3. Of the dozens of compositions tested in Table 3, the two compositions including rare earth elements *perform the absolute worst* (see Table 3, page 19). No other compounds received as few "very well" and as many "not possible" indications as those including rare earth compounds. One skilled the art would be taught away from Applicant's present invention if using Jung for guidance.

Secondary Considerations Of The Claimed Combination

The Applicant does not concede that a prima facie case has been established. However, inasmuch as such a prima facie case of obviousness has been established, it is rebutted by the strong showing of secondary considerations consisting of: 1) the experimental results, shown in the present application, demonstrating the superior results of the claimed combination, 2) The Declaration of Richard Albers, demonstrating the long felt need and failure of others to make a corrosion resistant primer that is chromate free; and 3) the Declaration of Charles Ray, and accompanying Exhibits A-H, showing the long felt need and commercial success of the claimed

invention. The Declarations do corroborate the teachings of the claimed invention. The Declarations describe preferred embodiments and their success. Such embodiments do correlate to the claimed invention in that they are within the scope of the claim invention and Applicant's specification experimentally shows the successful results of other embodiments within the scope of the claims. Applicant respectfully requests that the Examiner consider the Declarations and Exhibits as support for the non-obviousness of the claimed invention.

Lastly, as provided in earlier responses, Applicant has provided evidence of surprising and unexpected results. Table 3 in the specification specifically describes the use of dozens of rare earth compounds and neutral to slightly acid extenders. The results demonstrate that such a combination provides a functioning corrosion inhibiting composition without the use of a conversion coating. The preferred embodiments using praseodymium oxides and sulfates show even better results. So, it is unexpected that non-chromate containing, non-conversion coatings can provide successful corrosion inhibiting properties, as this is not taught in the prior art. In addition, products falling within the scope of the claimed invention are commercially successful and fulfilled a long-felt need in the industry.

Claim 56

Currently amended independent claim 56 describes, among other things, "one or more organic binders; and solid components comprising: a praseodymium (III/IV) mixed oxide; one or more substantially insoluble extenders selected from the group consisting of a neutral to slightly acidic generating extender, an acidic generating extender, and combinations thereof; wherein the solid components comprise about 1wt% to about 90 wt% of the praseodymium (III/IV) mixed oxide; wherein the non-chromate containing composition is capable of curing naturally and, upon curing, is capable of generating a pH between about 2 and about 8 at an interface between the composition and a substrate". The arguments discussed in regard to claim 1 are herein incorporated in their entirety.

Claim 67

Currently amended independent claim 67 describes, among other things, "one or more binders; and solid components comprising: one or more rare earth element oxides selected from

the group consisting of oxides, mixed oxides, solid solution oxides, hydrated oxides and hydroxides; and a praseodymium oxide selected from the group consisting of oxides, mixed oxides, solid solution oxides, hydrated oxides, hydroxides, and combinations thereof; one or more substantially insoluble extenders selected from the group consisting of a neutral to slightly acidic generating extender, an acidic generating extender, and combinations thereof; wherein the praseodymium oxide is present in an amount of about 1 wt% to about 90 wt% of the solid components; wherein the non-chromate containing composition is capable of curing naturally and, upon curing, is capable of generating a pH between about 2 and about 8 at an interface between the composition and a substrate". The arguments discussed in regard to claim 1 are herein incorporated in their entirety.

Claim 164

Currently amended independent claim 164 describes, among other things, "preparing a paint formulation comprised of an organic binder; and adding an effective corrosion-inhibiting amount of a solid component comprising: a praseodymium compound selected from the group consisting of oxides, mixed oxides, solid solution oxides, hydrated oxides, hydroxides, and combinations thereof to the paint formulation to produce a coating composition one or more substantially insoluble extenders selected from the group consisting of a neutral to slightly acidic generating extender, an acidic generating extender, and combinations thereof; wherein the praseodymium compound comprises about 1 wt% to about 90 wt% of the solid components; wherein the non-chromate containing composition is capable of curing naturally and, upon curing, is capable of generating a pH between about 2 and about 8 at an interface between the composition and a substrate". The arguments discussed in regard to claim 1 are herein incorporated in their entirety.

Because claims 2-8, 10-20, 30, 31, 58-59, 61, 62, 68-69, 139, 141, 143-145, 147-150, 165-168 and 184 depend from independent claims 1, 56, 67 and 164, they are believed to be in similarly allowable condition. Applicant respectfully requests removal of the obviousness rejection.

Claims 35, 39-55, 70, 121, 122, 132, 133, 147, 148, 151, 160, 161, 186, and 187 were rejected under 35 U.S.C. 103(a) as being unpatentable over Jung et al (WO 02/31064) in view of Reuter et al (US 2003/0082368).

Claim 35

Currently amended claim 35 recites, among other things, "one or more binders; and solid components comprising: one or more rare earth compounds; and one or more substantially insoluble extenders selected from the group consisting of calcium sulfate, strontium sulfate, and combinations thereof; wherein the non-chromate containing composition is capable of curing naturally and, upon curing, is capable of generating a pH between about 2 and about 8 at an interface between the composition and a substrate." The deficiencies of Jung, as discussed above in regard to claim 1, are herein incorporated by reference. As the Reuter reference does not remedy such deficiencies, claim 35 is believed to be in allowable condition.

As discussed in earlier responses in the record, the Reuter reference describes a coating utilizing colloidally dispersed metallic bismuth that is cured at high temperatures (see Examples). Calcium sulfate is mentioned in Reuter in a long list of filler or additive materials, including wood flour, talc, etc. (see Reuter at paragraphs [0068]-[0069]). Calcium sulfate is not used in the examples or claims, but merely mentioned in a long list of additive compounds.

The combination of Reuter and Jung teaches away from claim 35 for similar reasons as put forth in regard to claim 1. Additionally, the Reuter reference describes thermal curing only and with the use of bismuth salts as catalysts. The combination of Reuter and Jung does not provide all elements of the invention and teaches away from the present claims.

Claim 70

Currently amended claim 70 recites, among other things, "one or more binders; and solid components comprising: one or more rare earth element oxides selected from the group consisting of oxides, mixed oxides, solid solution oxides, hydrated oxides, and hydroxides; and one or more extenders selected from the group consisting of calcium sulfate, strontium sulfate, and combinations thereof; wherein the non-chromate containing composition is capable of curing naturally and, upon curing, is capable of generating a pH between about 2 and about 8 at an interface between the composition and a substrate." The deficiencies of Jung, as discussed above

in regard to claim 1, are herein incorporated by reference. As the Reuter reference does not remedy such deficiencies (see arguments above in regard to claim 35), claim 70 is believed to be in allowable condition.

Claim 121

Currently amended claim 121 recites, among other things, "preparing a paint formulation; and adding an effective corrosion-inhibiting amount of a rare earth compound and one or more extenders selected from the group consisting of calcium sulfate, strontium sulfate, and combinations thereof to the paint formulation to produce a non-chromate containing coating composition; wherein the non-chromate containing composition is capable of curing naturally and, upon curing, is capable of generating a pH between about 2 and about 8 at an interface between the composition and a substrate". The deficiencies of Jung, as discussed above in regard to claim 1, are herein incorporated by reference. As the Reuter reference does not remedy such deficiencies(see arguments above in regard to claim 35), claim 121 is believed to be in allowable condition.

Because claims 39-55, 122, 132, 133, 147, 148, 151, 160, 161, 186, and 187 depend from independent claims 35, 70 and 121, they are believed to be in similarly allowable condition. Applicant respectfully requests removal of the obviousness rejection.

Allowable Subject Matter

Claims 22 and 191 were objected to as being dependent upon a rejected base claim, but were indicated to be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's representative at (612) 373-6920 to facilitate prosecution of this application.

If necessary, please charge any additional fees or deficiencies, or credit any overpayments to Deposit Account No. 19-0743.

Respectfully submitted,

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